



DBLN CPSI 3396

This course is being offered at Griffith College, CAPA's academic partner in Dublin. The Irish academic system differs from the US, particularly with grading. Griffith College professors expect students to undertake a good deal of independent study to achieve a high mark in their classes. For additional information about this class, please contact the Boston Program Advising Team at 1-800-793-0334.

Probability and Statistics

Continuous Assessment: 30%

Exam: 70%

Intended Module Learning Outcomes

Upon successful completion of this module, you will be able to:

1. Calculate the probability of a given event.

2. Explain how unbiased sampling may be conducted.
3. Prepare and present summary statistics.
4. Estimate confidence intervals.
5. Conduct significance tests.
6. Calculate numbers of permutations and combinations.
7. Differentiate between random and non-random events.

Module Objectives

This module aims to support participants as they develop a broadly based, and intellectually challenging framework in the area of Probability & Statistics. Participants have an awareness of current statistical techniques, literature and research in the area. Participants are expected to apply the principles of probability and statistics to solve problems and inform decision making. Participants achieve this through developing knowledge and understanding of probability and statistical principles, while applying these principles in typical real-world scenarios.

Module Curriculum

Events, Outcomes & Probability

- Determining the probability of an event.
- Rules of probability.
- Dependent events.
- Conditional probability.
- Independent events.
- The probability tree.
- Baye's Theorem.

Summary Statistics

- Finding the mean, mode, median, variance and standard deviation for a set of data.
- Presentation and notation.

Correlation & Regression

- Getting the measure of a relationship between two variables.
- Scatter diagrams.
- Correlation co-efficients.
- Ranking

Sampling

- Finite and infinite populations.
- Selecting samples.

- Calculation of sample mean and variance.
- Introduction to the central limit theorem.

The Normal Distribution

- Characteristics of the Normal Distribution.
- Measures of location and dispersion.
- The characteristics of the Standard Normal Distribution.

Confidence Intervals

- Finding a confidence interval for a parameter.
- Finding a confidence interval for a proportion.

Hypothesis Testing

- Formulation of the Null and Alternative hypotheses.
- Levels of significance.
- One and two-tailed tests.
- Type I and Type II errors.
- The use of T-tests.

Discrete Probability Distributions

- The Poisson distribution.
- The Binomial distribution.
- Typical scenarios where these distributions are helpful and how to apply them.

Permutations & Combinations

- Calculating the numbers of combinations and permutations that are possible from a set of data with and without repetition.